

Accounting for Managers

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MGM341

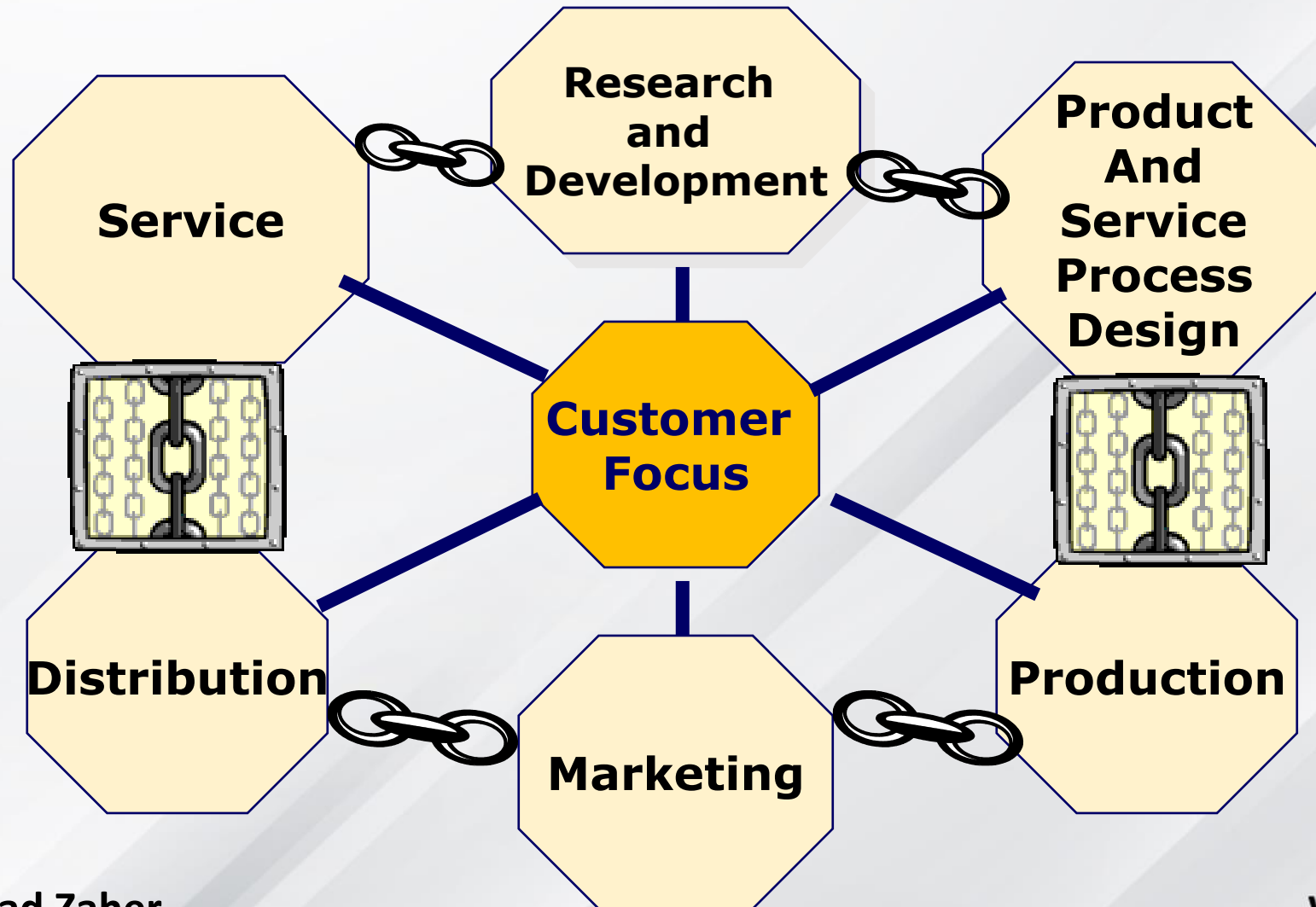
Lecture 4
(Cost behavior & cost management systems)



Learning outcomes

- LO 1** Identify the value chain.
- LO 2** Describe the core differences between cost ,expense ,&loss.
- LO 3** Explain the different cost classifications.
- LO 4** State the product cost versus period cost.
- LO 5** Describe manufacturing cost in the income statement.
- LO 6** Explain the types of inventories in the manufacturing industry.
- LO 7** Explain the cost statement and computing the cost of goods manufactured.

The Value Chain



Cost

Resources consumed for long term benefit to gain product or service

Expense

Resources consumed for short term benefit to achieve revenue.

Loss

Resources consumed without any benefit

Cost Classifications

Cost Object

Cost behavior

Manufacturing Cost

(1) Cost Object:

Cost object is anything you desire to measure its cost.

Example: Products, services, activities, Department.

Direct cost	Indirect cost
Direct cost can be traced directly to cost object. <u>Example</u> Cost of the cans for bottles can be easily traced to drink.	Indirect cost can not be easily traced to cost object. <u>Example</u> The salaries of supervisors who oversee production of other products.

Note:

- Direct cost **traced (assigned)** to cost object
- Indirect cost **allocated** to cost object

Note:

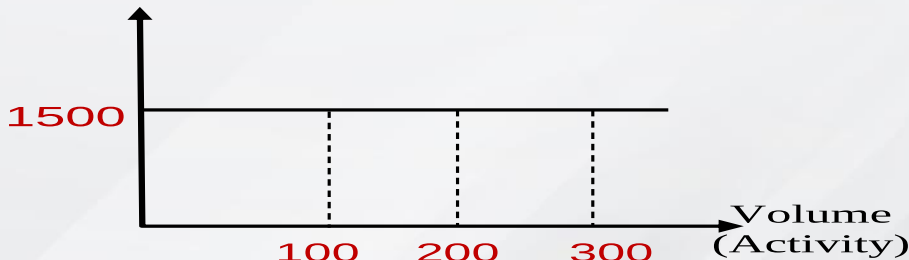
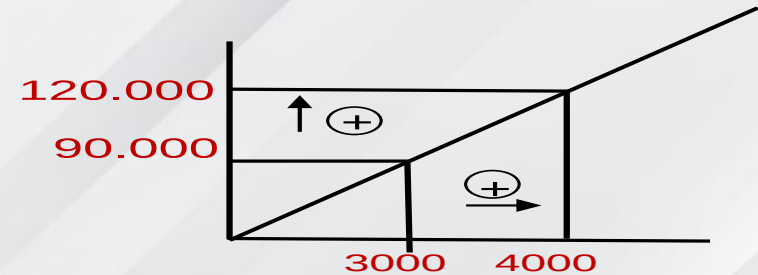
- **Cost assignment** includes tracing direct cost and allocating indirect cost.

Factors Affecting Direct/Indirect Cost Classification

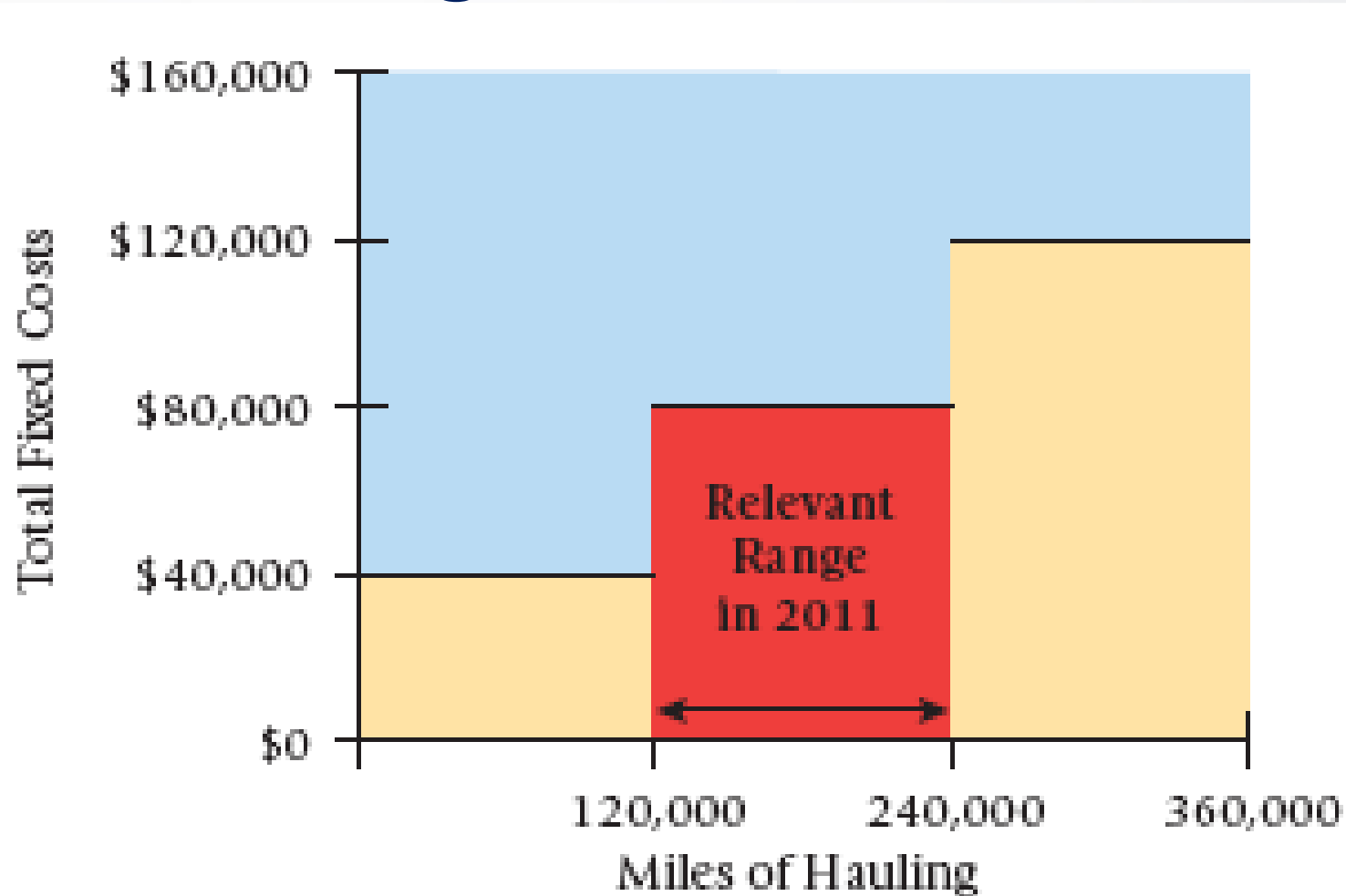
- **Cost materiality**
- **Availability of information-gathering technology**
- **Operational design**

2. Cost behavior:

Cost behavior refers to the way that costs respond to changes in volume of activity.

Fixed cost			Variable Cost		
Refers to costs with zero response to change in volume.			Variable cost changes by change in volume in the same direction and the same ratio.		
Fixed cost is fixed in total, but variable per unit.			Variable cost is variable in total but fixed per unit.		
Example			Example		
1	2 = 3 ÷ 1	3	1	2 = 3 ÷ 1	3
Activity	Fixed cost/unit	Total fixed cost	Production	Variable cost	Total variable cost
100	L.E 15	1500	3000	30	90.000
200	L.E 7.5	1500	4000	30	120.000
300	L.E 5	1500	5000	30	150.000
					
<u>Example</u> Rent Salaries Depreciation			<u>Example</u> Direct material Direct labor Direct expense		
			Note: All direct costs are variable costs.		

Relevant Range Visualized



Relevant range usually refers to a normal range of volume or normal amount of activity in which the total amount of a company's fixed costs will not change as the volume or amount of activity changes

3. Classification of Manufacturing Cost(**Product cost**)- (**Inventoriable cost**)

Direct Material

Are the acquisition costs of all material that become part of the cost object.

- **Lumber**
- **Steel**
- **Tires**
- **Spokes**
- **Handelbars**

Direct labor

Such as **wages for production workers** or benefits for persons who work Directly on manufactured product.

Manufacturing (Factory) Overhead

It includes all indirect costs such as:

- **Indirect** material (**Glue-Screws**).
- **Indirect** labor (**Service workers**).
- **Factory** rent.
- **Factory** utilities.
- Salary of **plant** Manager & Supervisors.
- Depreciation for **factory** plant assets.
- Maintenance for **factory** Equipment.
- Property tax of **factory** building.

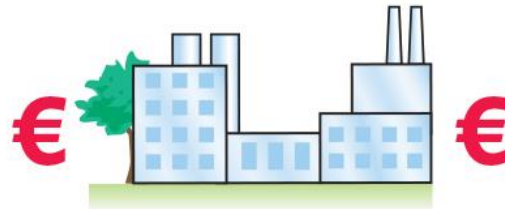
Manufacturing consists of activities and processes that convert raw materials into finished goods.



Direct Materials



Direct Labor



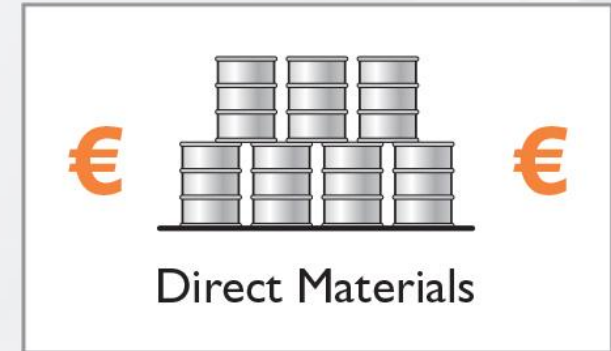
Manufacturing
Overhead

Manufacturing Costs

Direct Materials

Raw Materials

- Basic materials and parts used in manufacturing process
- Raw materials that can be physically and directly associated with finished product during the manufacturing process are **direct materials**



Manufacturing Costs

Indirect Materials have one of two characteristics

1. Not physically part of finished product or
2. they are impractical to trace to the finished product because their physical association with the finished product is too small in terms of cost.

Considered part of **manufacturing overhead**

Manufacturing Costs

Direct Labor

Work of factory employees that can be physically and directly associated with converting raw materials into finished goods.



Indirect Labor

- Work of factory employees that has no physical association with finished product or
- which is impractical to trace costs to goods produced.

Manufacturing Costs

Manufacturing Overhead

- Costs that are indirectly associated with manufacturing the finished product (see Alternative Terminology).
- Includes all manufacturing costs except direct materials and direct labor.
- Also called factory overhead, indirect manufacturing costs, or burden.

Prime cost, Conversion cost **Product cost and period cost**

(1) Prime cost

= Direct material + Direct labor

(2) Conversion cost

Conversion costs are all manufacturing cost incurred to convert direct material in to finished goods.

Conversion cost	=	Direct labor	+	Manufacturing overhead
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(3) Product cost (Inventoriable cost)

Direct material	+	Direct labor	+	Overhead
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Note:

1. Inventoriable cost is an asset and appears on the **balance sheet**.
2. In service companies there is no inventories so, they have no inventoriable (Product cost).

(4) Period cost (Non-Inventoriable cost- Non Manufacturing cost)

Period cost can't be inventoried and charged off in income statement.

Example: Marketing ,Selling , general, research &Development and administrative cost

Product Versus Period Costs

Product Costs

Manufacturing Costs

Direct Materials

Direct Labor

Manufacturing Overhead

- Indirect materials
- Indirect labor
- Other indirect costs

Period Costs

Non-Manufacturing Costs

Marketing Expenses

Selling Expenses

Administrative Expenses

General Expenses

Research & Development

DO IT - 1

Classify the Following items in to direct material, direct labor or factory overhead.

Material	
Lumber	10.000
Glue	800
Screws	1000
Supervisors	20.000
Others	
Factory Rent	70.000
Factory utilities	20.000
Depreciation of factory equipment	21.000
Salaries (Factory)	80.000

Cost item	Direct material	Direct labor	Factory overhead
Lumber	√		
Glue			√
Screws			√
Supervisors			√
Factory Rent			√
Factory utilities			√
Depreciation of factory equipment			√
Salaries			√

DO IT - 2 Suppose you started your own snowboard factory,. Here are some of the costs that your snowboard factory would incur. Assign the following costs:

Cost Item	Product Costs			Period Costs
	Direct Materials	Direct Labor	Manufacturing Overhead	
1. Material cost (€30 per board)	X			
2. Labor costs (€40 per board)		X		
3. Depreciation on factory equipment (€25,000 per year)			X	
4. Property taxes on factory building (€6,000 per year)			X	

Cost Item	Product Costs			Period Costs
	Direct Materials	Direct Labor	Manufacturing Overhead	
5. Advertising costs (€60,000 per year)				X
6. Sales commissions (€20 per board)				X
7. Maintenance salaries (factory facilities, €45,000 per year)			X	
8. Salary of plant manager (€70,000 per year)			X	
9. Cost of shipping boards (€8 per board)				X

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DO IT - 3

A bicycle company has these costs: tires, salaries of employees who put **tires** on the wheels, factory depreciation, advertising expenditures, **lubricants**, **spokes**, **salary** of factory manager, salary of accountant, **handlebars**, and salaries of factory maintenance employees. **Classify** each cost as direct materials, direct labor, overhead, or a period cost.

Direct Materials

- Tires
- Spokes
- Handlebars

Direct Labor

- Salaries of employees who put tires on the wheels

Overhead

- Factory depreciation
- Factory lubricants
- Factory manager salary
- Factory maintenance employees salary

Advertising expenditures and salary of accountant are **period costs**.

DO IT - 4

Assume that you have the following cost data for the period ended Dec.31.2023 about one of manufacturing company which produces plastic products:

Material costs L.E. 100,000 (60% direct)

Labor costs L.E. 60,000 (L.E. 45,000 direct)

Other Factory overhead L.E. 11250 - selling expenses L.E 27000 -R&D L.E 6750

1. prime cost equal.....

- a) 108000 b) 104000 c)105000 d) 102000

2. conversion cost of the item produced equal.....

- a)111250 b) 110300 c)112150 d) 103400

3. The amount of period cost equal

- a) 32450 b) 30500 c)33750 d) 33570

4. product cost equal

- a)171000 b) 157300 c)161200 d) 171250

1- What is the prime cost of the item produced?

Prime cost = Direct materials+ Direct Labor

Prime cost = (60% * 100,000) + 45,000+0

Prime cost= 60,000 + 45,000 = 105.000

2- What is the conversion cost of the item produced?

Conversion cost = Direct Labor + Manufacturing overhead .

Conversion cost= 45,000 + (40,000 + 15,000 + 11,250) = 111,250

3 - What is the period cost of the item produced?

- Period cost = selling expenses + R & D

Period cost = 27.000 + 6.750 – 33750

4 - What is the product cost of the item produced?

Product costs = Direct material + Direct labor + Manu. Overhead

Product costs = 60.000 + 45.000 + (40.000 + 15.000 + 11.250)

Products costs = 171.250

Manufacturing Costs in Financial Statements

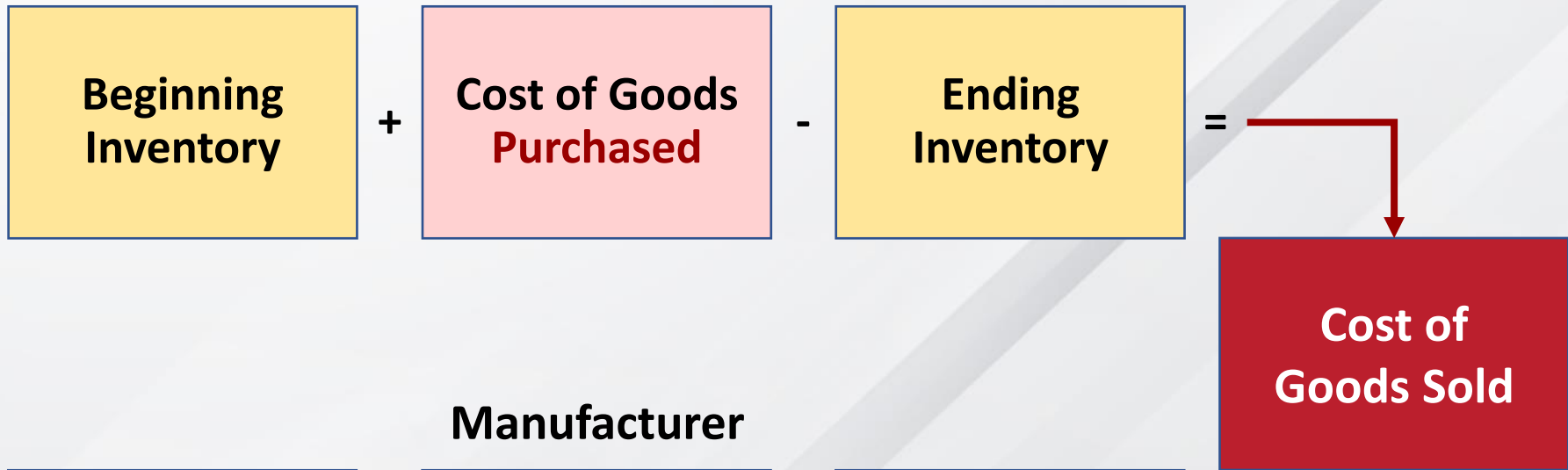
Income Statement

Under a **periodic inventory system**, the income statements of a merchandiser and a manufacturer differ in the **cost of goods sold** section.

“COGS”

Income Statement

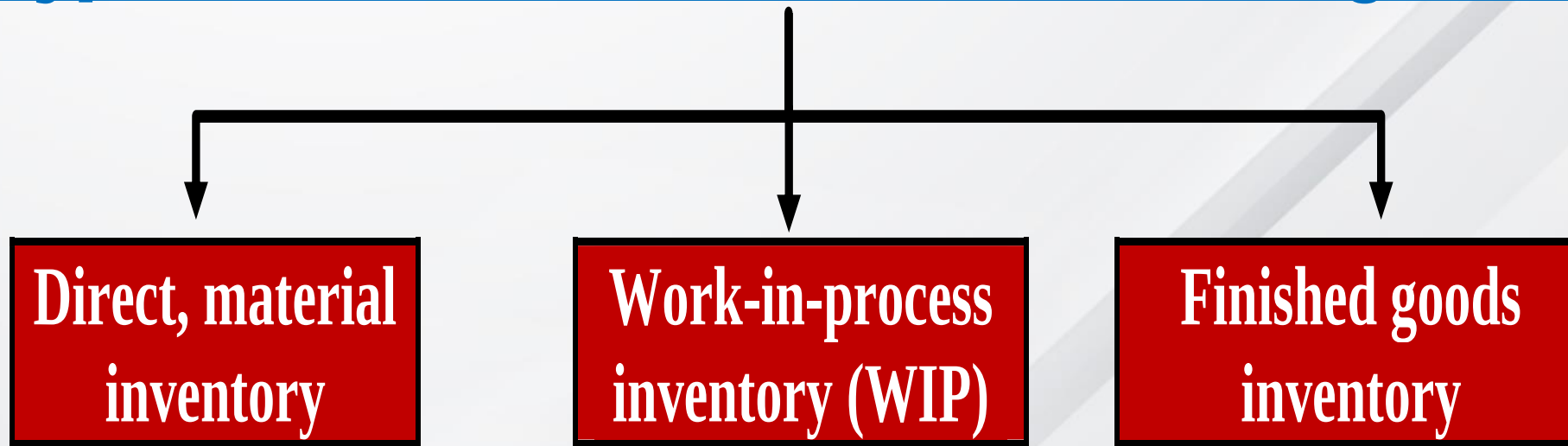
Merchandiser



Manufacturer



Types of inventories in Manufacturing industry



Computing cost of goods manufactured

Direct material inventory (Beginning)		x	
+			
Purchase of direct materials			
Direct material available for use		x	
Direct material inventory (ending)		(x)	
Total manufacturing cost	Direct material used		xx
	+		
	Direct manufacturing labor		xx
	+		
	Indirect manufacturing overhead		
	* Depreciation (Plant and equipment)	x	
	* Plant supervisory salaries	x	
	* Plant supplies used	x	
	* Indirect labor	x	
	* Indirect material	x	
Total manufacturing cost			xx
+			
Beginning inventory of W.I.P			xx
—			
Ending inventory of W.I.P			(xx)
Cost of goods manufactured			xx

Computing cost of goods sold

Cost of goods manufactured	XX
+ Beginning finished goods inventory	XX
Cost of goods available for sale	XX
- Ending finished goods inventory	(XX)
Cost of good sold (COGS)	XX

Computing gross profit

Sales	XX
- Cost of goods sold	(XX)
Gross Profit	XX

DO IT! 5

The following information is available for Kim Ltd. (amounts are in thousands).

		<u>March 1</u>	<u>March 31</u>
Raw materials inventory		\$12,000	\$10,000
Work in process inventory		2,500	4,000
Materials purchased in March	\$90,000		
Direct labor in March	75,000		
Manufacturing overhead in March	220,000		

Compute the cost of goods manufactured for the month of March 2020.

**Cost of Goods Manufactured Schedule
For the Month Ended March 31, 2020**

Direct materials

Raw materials, March 1 \$ 12,000

Raw materials purchases 90,000

Total raw materials available for use 102,000

Less: Raw materials, March 31 10,000

Direct materials used \$ 92,000

Direct labor 75,000

Manufacturing overhead 220,000

Total manufacturing costs 387,000

+ Work in process, March 1 \$ 2,500

Less: Work in process, March 31 4,000

Cost of goods manufactured \$385,500

**In case of
automation,
direct labor is
declined from
the
components of
product cost**

DO IT - 6

The following information pertains to Scott's production company:

Beginning finished goods, 1/1/2007	L.E. 40.000
Ending finished goods, 12/31/2007	33.000
Cost of goods sold	250.000
Sales revenue	600.000
Operating expenses	120.000

Required

- What is cost of goods manufactured for 2007?
- What is gross margin for 2007?
- What is operating income for 2007?

1. COG Manufactured .

COG Sold	=	Beg. F.G. Inventory	+	COG Manuf.	-	End. F.G. Inventory
250000	=	40000	+	??	-	33000
COG. Manuf.	=	250000	-	40000	+	33000
= 243000 L.E						

2. Gross Margin = Gross Profit

3. Operating Income

Sales Revenue	600000
- COGS	(250000)
Gross Profit	350000
- Operating Expenses	(120000)
Operating Income	230000

	Beginning of 2023	Ending of 2023
Direct material inventory	22000	26000
Work-in-process inventory	21000	20000
Finished goods inventory	18000	23000
Purchase of direct material		75000
Direct manufacturing labor		25000
Indirect manufacturing labor		15000
Plant insurance		9000
Depreciation of equipment (plant)		11000
Repair and maintenance Plant		4000
Marketing distribution and customer service cost		93000

Required:

1) Compute the cost of goods manufactured for 2023.

Direct material inventory (Jan. 1)	22000	
+		
Purchase of direct material	75000	
Direct material available for use	97000	
—		
Direct material ending inventory (Dec. 31.2023)	(26000)	
Direct material used		71.000
+ Direct manufacturing labor		25.000
+ <u>Indirect manufacturing cost:</u>		
Indirect labor	15000	
Plant insurance	9000	
Depreciation-plant	11000	
Repair and maintenance-plant	4000	39000
Total manufacturing cost		135000
Beginning work-in process inv.		21000
—		
Ending work-in-process inv.		(20000)
Cost of goods manufactured		136000

Given the following data of Ahmed manufacturing co. its first quarter of operation that ended on march31,2015

Direct material inventory	L.E 30000
Work-in-process inventory	L.E 40000
Finished goods inventory	L.E 20000
Purchase of direct material	L.E 100000
Direct manufacturing labor	L.E 100000
Indirect manufacturing overhead	L.E 60000

Required

- 1- Compute Prime cost and conversion cost
- 2- Compute the cost of goods manufactured during the period
- 3- Compute the cost of goods sold during the period

Cost of goods manufactured

Direct material inventory	-
+	
Purchase of direct material	100000
Direct material available for use	100000
—	
Direct material ending inventory	(30000)
Direct material used	70000
+	
Direct manufacturing labor	100000
+	
Indirect manufacturing cost:	60000
Total manufacturing cost incurred	230000
Beginning work-in process inv.	-
—	
Ending work-in-process inv.	(40000)
Cost of goods manufactured	190000

prime cost

Direct material used	70000
Direct manufacturing labor	100000
Total prime cost	170000

Conversion cost

Direct labor	100000
Indirect manufacturing overhead	60000
Conversion cost	160000

Use the following information to answer the next tow questions :

The estimated unit costs for a company using absorption (full) costing and planning to produce and sell at a level of 20.000 units per month are as follows

Prime cost L.E 52 (Direct materials L.E 32)

Manufacturing overhead L.E 21 (Fixed manufacturing overhead L.E 6)

Variable selling L.E 4

1. Estimated conversion costs per unit are :

a) L.E 35 b) L.E 41 c) L.E 48 d) L.E 67

2. Estimated total variable costs per unit are :

a) L.E 38 b) L.E 18 c) L.E 71 d) L.E 70

1. **Prime cost** = Direct materials+ Direct Labor

Direct labor = Prime cost – Direct material

Direct labor = 52 - 32 = **L.E 20**

Conversion cost = Direct Labor + Manufacturing overhead .

Conversion cost= 20 + 21 = **L.E 41**

2. **Estimated total variable costs per unit=**

Direct material + direct labor +Variable overhead + Variable Selling

=32+20+15+ 4 = **L.E 71**

DO IT

1. Cost assignment is the process of tracing direct cost and allocating indirect costs to a cost object.

True

2. Total manufacturing cost contains all types of manufacturing and non-manufacturing costs.

False

3. Costs are resources consumed for a short term benefit to gain product or service.

false

4. Total Conversion costs include all direct manufacturing cost only

False

5. Product cost are called as manufacturing overhead

False

6. Conversion costs are the sum of direct labor and manufacturing overhead

True



Thank You